

**EXAMINATION #1 VERSION C**  
**"Introduction to Economics"**  
**September 17, 2014**

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Points will be subtracted for illegible writing or incorrect rounding. Maximum total points are 100.

**I. Multiple choice:** Circle the one best answer to each question. Please use the margins for scratch work.  
[1 pt each, 16 pts total]

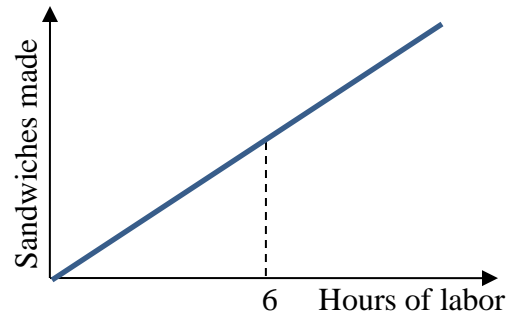
- (1) The assumption in economics that people are rational means that people
- make sacrifices today for a better future.
  - maximize their income.
  - use math to make decisions.
  - ignore "soft" concerns like friendships and charity.
  - do the best one can with what they have.

- (2) Rational choice implies pursuing an activity until the marginal cost of the last unit
- is much less than its marginal benefit.
  - is much greater than its marginal benefit.
  - begins to exceed its marginal benefit.
  - begins to fall below its marginal benefit.

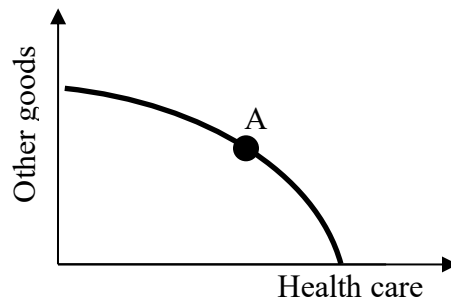
- (3) In economics, an *equilibrium* is a situation where
- no one wants to change their behavior.
  - inflation equals zero percent.
  - economic growth is zero.
  - costs equal benefits.

- (4) "Interest rates should be raised now, before inflation returns" is an example of
- a positive statement.
  - a normative statement.
  - both of the above.
  - none of the above.

- (5) Is the production function below characterized by diminishing returns to labor input?
- Yes, for all levels of labor input.
  - No, not for any levels of labor input.
  - Yes, but only after 6 hours of labor input.
  - Yes, but only before 6 hours of labor input.

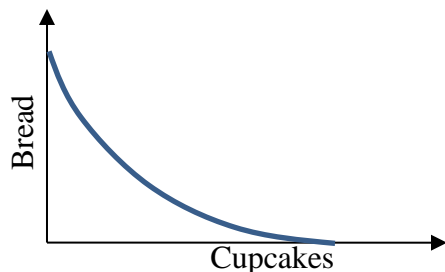


- (6) The graph below shows the production possibility curve for some country. The combination of outputs represented by point A
- is feasible and efficient.
  - is feasible but not efficient.
  - is infeasible.
  - cannot be determined from information given.



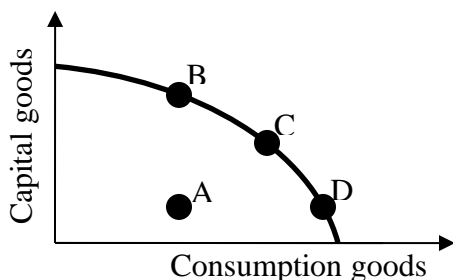
(7) Tasty Bakery makes bread and cupcakes, with the production possibility curve shown below. As more cupcakes are produced, the opportunity cost of the last cupcake produced

- a. decreases.
- b. increases.
- c. first increases, then decreases.
- d. remains constant.



(8) The graph below shows the production possibility curve for Country X. Which combination of outputs, chosen today, will cause the country's productive capacity to grow fastest in the future?

- a. Combination A.
- b. Combination B.
- c. Combination C.
- d. Combination D.



(9) Farm A can produce 100 units of corn or 25 units of soybeans. Farm B can produce 300 units of corn or 150 units of soybeans. Which farm has a comparative advantage in corn?

- a. Farm A.
- b. Farm B.
- c. Both farms.
- d. Neither farm.

(10) Monetary exchange is more common today than bartering because

- a. bartering requires a "double coincidence of wants."
- b. bartering is often illegal whereas anything can be legally bought and sold with money.
- c. bartering is a lost art.
- d. monetary exchanges are subject to less tax.

(11) The *law of one price* means that

- a. each buyer will pay only once for a good.
- b. all buyers will pay roughly the same price.
- c. each buyer will pay her or his own price.
- d. the prices of different goods—like cell phones and bicycles—will gradually converge to each other.

(12) A demand curve for tablet computers shows how the quantity of tablet computers people want to buy is affected by

- a. the income of consumers.
- b. the price of the tablet computer itself.
- c. the price of substitutes, like desktop computers.
- d. the tablet computer's features.

(13) As consumers' incomes rise, they typically go to more music concerts, because concerts are

- a. an inferior good.
- b. a normal good.
- c. a substitute good.
- d. a complementary good.

(14) Spaghetti sauce is made from tomatoes, so if the price of tomatoes falls, then the

- a. demand for spaghetti sauce will shift right.
- b. supply of spaghetti sauce will shift right.
- c. demand for spaghetti sauce will shift left.
- d. supply of spaghetti sauce will shift left.

(15) Some people believe there is excess supply in the housing market. If they are right, then the price of houses can be expected to

- a. fall.
- b. remain constant.
- c. rise.
- d. Price movements are not related to excess supply.

(16) In autumn, the price of swimsuits falls and the quantity sold decreases. This could be caused by a

- a. rightward shift in the supply of swimsuits.
- b. leftward shift in the supply of swimsuits.
- c. rightward shift in the demand for swimsuits.
- d. leftward shift in the demand for swimsuits.

**II. Problems:** Insert your answer to each question in the box provided. Please use the margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Using slopes: 2 pts] Suppose that the slope of the relationship between  $X$  and  $Y$ , with  $X$  on the horizontal axis and  $Y$  on the vertical axis, is 4. That is  $\Delta Y/\Delta X = 4$ . Now suppose that  $X$  **decreases** by 5 units.

a. Does  $Y$  increase or decrease?

units

b. By how much?

(2) [Percent changes: 2 pts] Income per capita in a country equals total income divided by the population. Suppose total income increases by 4 percent and population increases by 1 percent.

a. Does income per capita *increase* or *decrease*?

%

b. By approximately how much?

(3) [Economic capital: 6 pts] Which of the following are examples of *economic capital*? Answer YES or NO.

a. State and local government bonds.


b. Tractor-trailer trucks.

c. Ferry boats.

d. Fiber-optic communications networks.


e. Savings accounts.

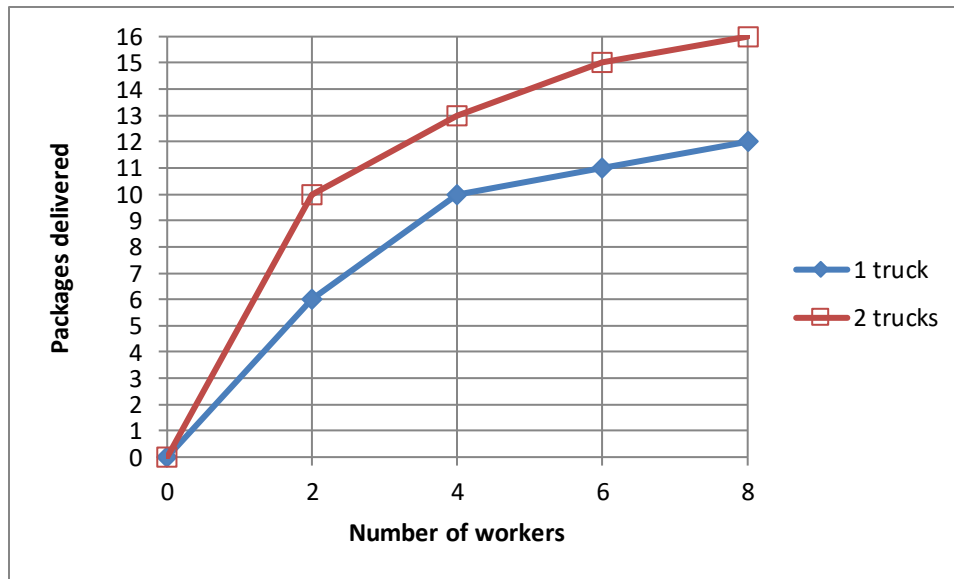
f. Grain elevators.

(4) [Production functions: 7 pts] A work crew fixes potholes. Complete the table by computing the work crew's average product and marginal product and placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question below.

<i>Number of workers</i>	<i>Number of potholes fixed</i>	<i>Average Product</i>	<i>Marginal Product</i>
0 workers	0 potholes		
			potholes per worker
3 workers	15 potholes	potholes per worker	
			potholes per worker
6 workers	24 potholes	potholes per worker	
			potholes per worker
9 workers	27 potholes	potholes per worker	

Is the work crew's production function characterized by *diminishing returns* to labor input? Answer YES or NO.

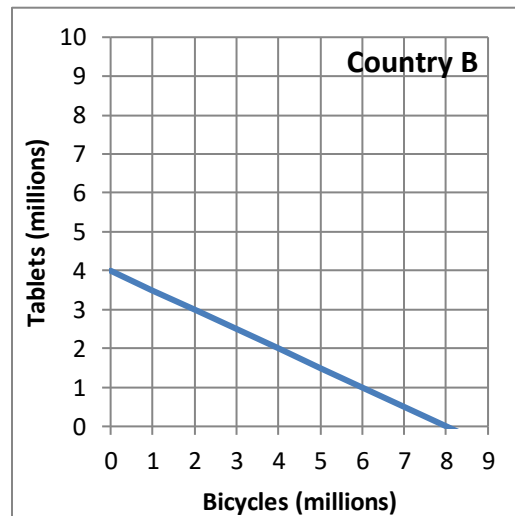
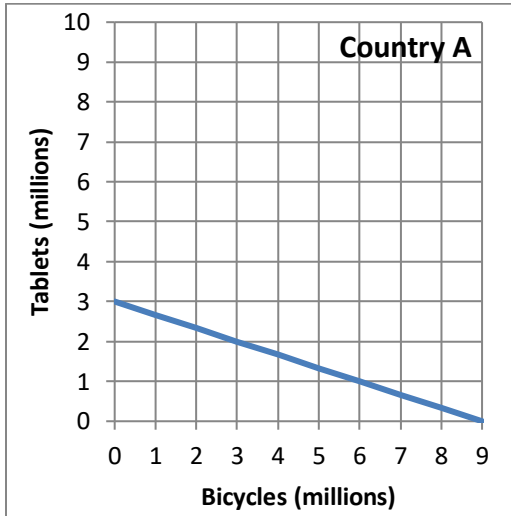
(5) [Production functions: 6 pts] Acme Package Delivery uses workers and trucks to deliver packages. Its production function is illustrated by the following graphs. Suppose the company employs **one truck and two workers**.



- What is the average product of workers?
- What is the marginal product of workers, if the number of workers were increased from two to four?
- What is the marginal product of trucks, if the number of trucks were increased from one to two?

	packages per worker
	packages per worker
	packages per truck

(6) [Comparative advantage, gains from trade: 17 pts] Country A and Country B each produce bicycles and tablets. They each face a tradeoff between these two products because their workforces are limited. Their production possibility curves are shown below.



- a. [2 pts] What is Country A's opportunity cost of producing a bicycle?
- b. [2 pts] What is Country B's opportunity cost of producing a bicycle?
- c. [2 pts] What is Country A's opportunity cost of producing a tablet?
- d. [2 pts] What is Country B's opportunity cost of producing a tablet?
- e. [2 pts] Which country has a comparative advantage in producing bicycles?
- f. [2 pts] Which country has a comparative advantage in producing tablets?

	tablets
	tablets
	bicycles
	bicycles

- g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of bicycles and tablets *outside* their individual production possibility curves if \_\_\_\_\_ produces and exports **two million** tablets to \_\_\_\_\_, which produces and exports \_\_\_\_\_ million bicycles in return.
- h. [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each country, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

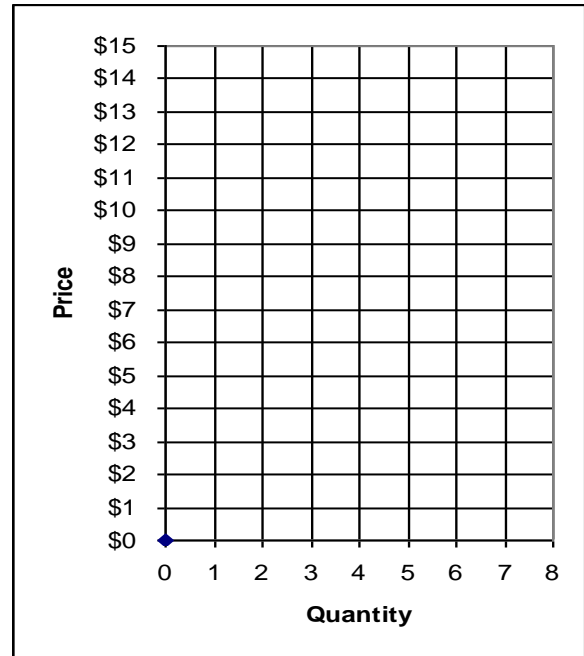
(7) [Market equilibrium: 12 pts] Suppose seven buyers and seven sellers engage in a market similar to the activity

we did in class. Each buyer may buy at most one unit and each seller may sell at most one unit, but no one is forced to trade. Assume that buyers and sellers are each trying to maximize their surplus (or “gains from trade”). Surplus for each buyer equals the buyer's value of the good minus the price paid. Surplus for each seller equals the price received minus the seller's cost of the good. Surplus of persons who do not trade is zero. Buyers’ values and sellers’ costs are given in the following table.

<i>Buyer</i>	<i>Value</i>	<i>Seller</i>	<i>Cost</i>
<i>Bob</i>	\$ 14	<i>Sue</i>	\$ 1
<i>Barb</i>	\$ 14	<i>Steve</i>	\$ 1
<i>Ben</i>	\$ 13	<i>Sam</i>	\$ 2
<i>Bailey</i>	\$ 12	<i>Sven</i>	\$ 10
<i>Brian</i>	\$ 9	<i>Sarina</i>	\$ 12
<i>Betty</i>	\$ 6	<i>Sean</i>	\$ 13
<i>Bert</i>	\$ 3	<i>Sally</i>	\$ 14

Suppose with some experience, the market settles on a single price. All trades are made at that price.

Use this graph for scratch work.



- Suppose the price were \$4. Would there be *excess demand*, or *excess supply*, or *neither*?
- What is the *equilibrium* price likely to be, in whole dollars?
- How many units of the good will be sold in this market?
- Compute the total revenue received by sellers (which equals the total spending by buyers).
- Compute the combined total surplus (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!)
- Who enjoys higher surplus in this particular market, the *buyers* or the *sellers*? Or is buyers’ total surplus *equal* to sellers’ total surplus?

\$
units
\$
\$

(8) [Shifts in demand and supply: 15 pts] Analyze each of the following markets according to the accompanying imaginary scenario.

a. Consider the market for **hotel rooms**. A recession lowers consumers' incomes.

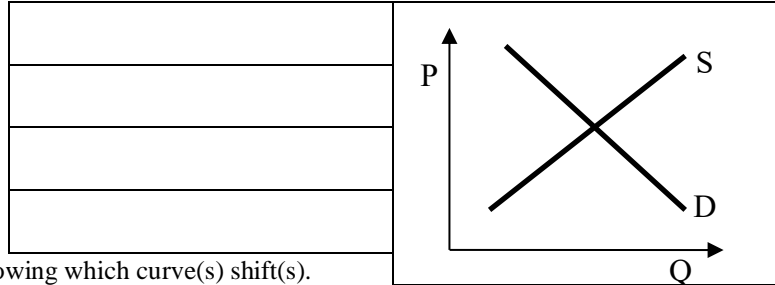
Does demand shift *left*, *shift right*, or remain *unchanged* ?

Does supply shift *left*, *shift right*, or remain *unchanged* ?

Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).



b. Consider the market for **sodapop**. The price of corn syrup, an ingredient in sodapop, rises.

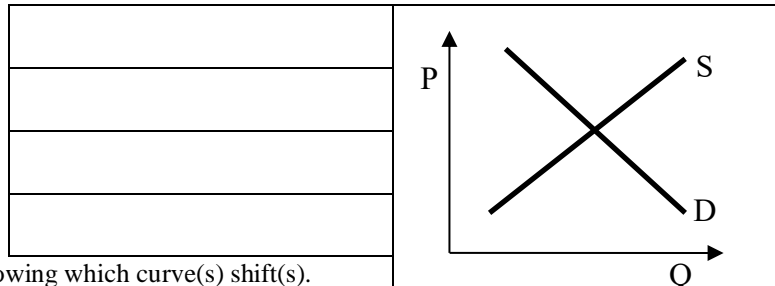
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Does supply shift *left*, *shift right*, or remain *unchanged* ?

Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).



c. Consider the market for **natural gas**. Suppose new technologies lower the cost of producing natural gas. Simultaneously, the price of coal rises.

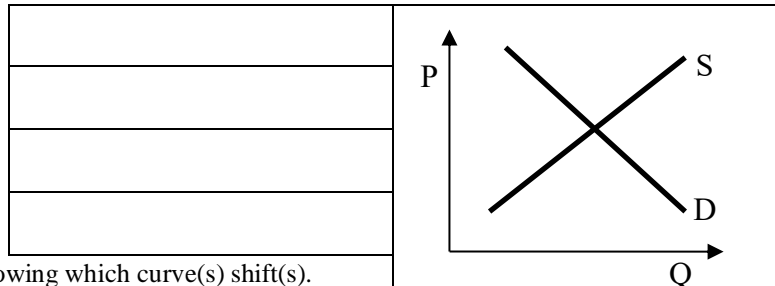
Does demand shift *left*, *shift right*, or remain *unchanged* ?

Does supply shift *left*, *shift right*, or remain *unchanged* ?

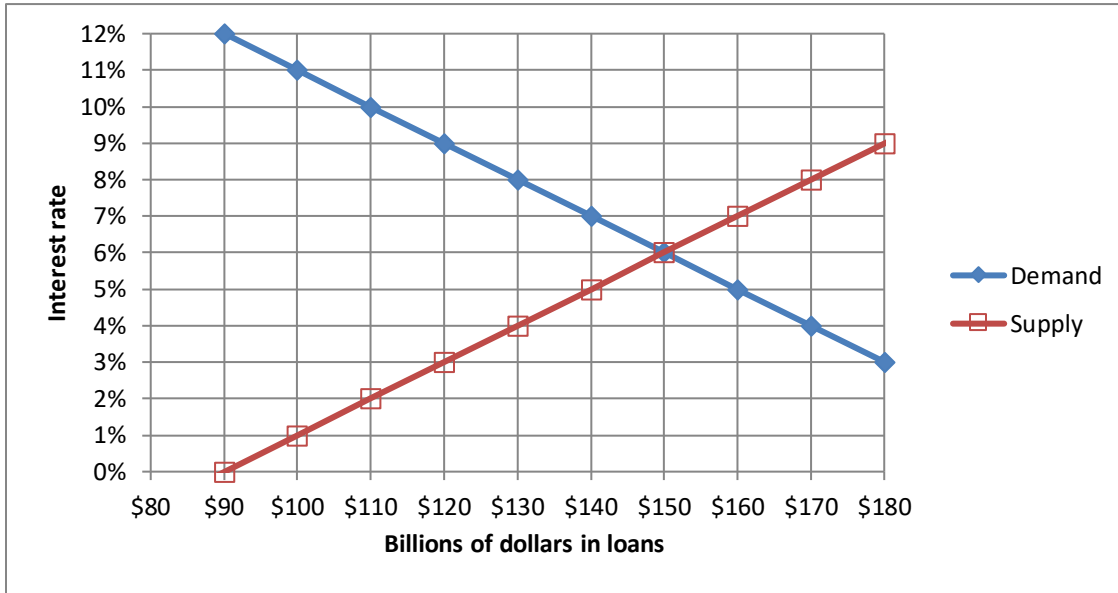
Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).



(9) [Market equilibrium, price controls: 12 pts] The following graph shows the credit market—that is, the market for loans. Note that the interest rate is the price of a loan.



First, find the unregulated market equilibrium.

a. Find the equilibrium price.

%
\$ <span style="float: right;">billion</span>

b. Find the equilibrium quantity.

Second, suppose the government imposes a maximum interest rate (a type of price ceiling) of 4%. No loan may be given for any higher interest rate.

c. Compute the quantity of loans demanded at this interest rate.

\$ <span style="float: right;">billion</span>
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d. Compute the quantity of loans supplied at interest rate.

\$ <span style="float: right;">billion</span>
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e. Will there be *excess supply* or *excess demand* with this price ceiling?

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f. How much?

\$ <span style="float: right;">billion</span>
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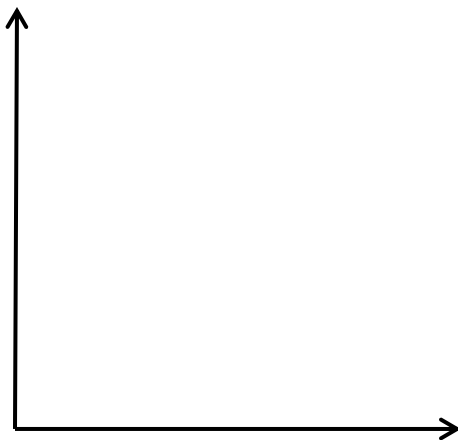


**III. Critical thinking:** Write a one-paragraph essay answering **ONE** question below (your choice). [4 pts]

(1) Consider the following statement. "The United States produces more cars and more corn than Mexico. Therefore, the United States cannot benefit from trade with Mexico in these goods." Assume the first sentence is correct. Do you agree or disagree with the second sentence? Justify your answer.

(2) Why are watermelons cheap in Iowa in summer, but expensive in winter? Justify your answer with a supply-and-demand diagram.

Circle the question you are answering. Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.



[end of exam]